Chapter 1: Morbidity

Introduction

Cardiovascular disease (CVD) includes all diseases of the heart and blood vessels, which includes coronary heart disease, stroke, congestive heart failure, hypertensive disease, and atherosclerosis. Estimates from 2001 indicate that 64.4 million Americans (more than one-fifth of the U.S. population) have one or more forms of CVD[1]. According to some research, incidence and prevalence rates for heart disease and stroke are not improving despite declining mortality rates for heart disease and stroke (see chapter 2 for further detail on mortality trends)[2,3]. These declining mortality trends are believed to be a result of better quality care that is subsequently resulting in less case fatality[2,3]. Furthermore, the recent increases in obesity and lack of physical activity (see chapter 4 for further detail on CVD risk factors) will likely contribute to more CVD in the coming years.

In this chapter, an overview of national and Nebraska prevalence data for total CVD as well as specific cardiovascular diseases (coronary heart disease and stroke) are presented. National data on CVD incidence are also presented.

Prevalence is defined as the number or proportion of cases or events or conditions in a given population[4]. In other words, prevalence of CVD is an estimate of how many people have CVD at a given point in time, such as today. In contrast, *incidence* is defined as a measure of the frequency with which an event, such as a new case of illness, occurs in a population over a period of time (among at risk individuals)[4].

Total Cardiovascular Disease Morbidity

National Overview

According to the CDC, greater than 1 in every 5 Americans (22.6%) currently has one or more forms of CVD[1]. This indicates that an estimated 64.4 million Americans currently have CVD[1]. Slightly more U.S. females than males are estimated to have CVD, 33.3 million and 31.1 million respectively[1].

While older adults (aged 65 years and older) are at greater risk for CVD mortality, the majority of Americans with CVD are under 65 years of age. In 2001, of the 64.4 million Americans with one or more forms of CVD, 39.1 million (or approximately 3 in every 5) are under 65 years of age[1]. This indicates that most Americans currently living with CVD are in their most productive (pre-retirement) years of life.

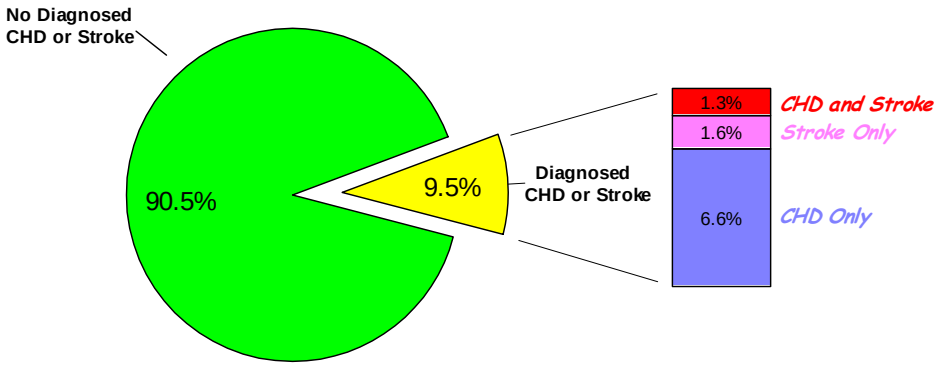
African Americans are more likely than both Whites and Mexican Americans to have CVD[1]. In 2001, 40.5 percent of African American males aged 20 years and older had CVD, making them 35 percent more likely than White males and 40 percent more likely than Mexican American males to have CVD[1]. Similar to males, 39.6 percent of African American females aged 20 years and older had CVD in 2001, making them 49 percent more likely than Mexican American females and 66 percent more likely than White females to have CVD[1].

Nebraskans with Diagnosed CVD[5]

In 2001, nearly 1 in every 10 (9.5%) Nebraska adults (aged 18 years and older) reported that they have had a diagnosed heart attack, a diagnosed stroke, or have been diagnosed with coronary heart disease (CHD) (meaning that they had been told by a doctor, nurse, or health professional that they have had a heart attack or myocardial infarction, a stroke, or that they suffer from angina or coronary heart disease). This indicates that an estimated 100,000 to 143,000 Nebraska adults have had a diagnosed heart attack, stroke, or been diagnosed with coronary heart disease. Given the long latency period of CVDs, that often provide no recognizable warning to their victims, many additional Nebraska adults are believed to have undiagnosed CVD (that they are unaware of).

Nebraska adults are more likely to report diagnosed CHD (including heart attack) than to report having had a diagnosed stroke. Among the 9.5 percent of adults reporting diagnosed CHD or stroke in 2001, the majority (almost 7 in every 10) reported having been diagnosed with CHD (including heart attack) but not stroke (Figure 1).

Figure 1: Percentage Breakdown of Diagnosed CHD and Stroke*
Among Nebraska Adults in 2001



*Adults (18+) that have been told by a doctor, nurse, or health professional that they have had a heart attack, myocardial infarction, or stroke or have angina or coronary heart disease.
Source: 2001 Nebraska CVD Survey

Large disparities in diagnosed CHD and stroke exist within certain Nebraska subpopulations (Table 1). Age has the strongest association with diagnosed CHD and stroke. In 2001, adults aged 65 years and older were 3.5 times more likely than adults aged 45-64 years and 6.4 times more likely than adults aged 25-44 years to report diagnosed CHD or stroke. Gender is also strongly associated with the prevalence of diagnosed CHD and stroke in Nebraska.

Even after being told by a doctor, nurse, or health professional that they have had a heart attack, stroke, or have coronary heart disease, many Nebraska adults continue to engage in unhealthy behaviors that place them at increased risk for further CVD (Figure 2). In 2001, among Nebraska adults with diagnosed coronary heart disease or stroke, greater than 1 in every 5 smokes cigarettes, 1 in every 3 adults aged 35 years and older (without any aspirin related health problems) does not take aspirin daily or every other day, greater than 1 in every 3 is obese, and greater than 2 in every 5 do not engage in any leisure time physical activity.

Table 1: Prevalence of Diagnosed CHD or Stroke* Among Nebraska Adults, 2001

	n**	Weighted Percentage	Relative Risk^
Overall	1,178	9.5%	-
Gender			
Female	781	7.3%	reference
Male	397	11.9%	1.63+
Age			
18-24	113	0.6%	0.02++
25-44	408	4.6%	0.16++
45-64	353	8.5%	0.29++
65+	294	29.4%	reference

*Adults (18+) that have been told by a doctor, nurse, or health professional that they have had a heart attack or myocardial infarction, a stroke, or that they have angina or coronary heart disease

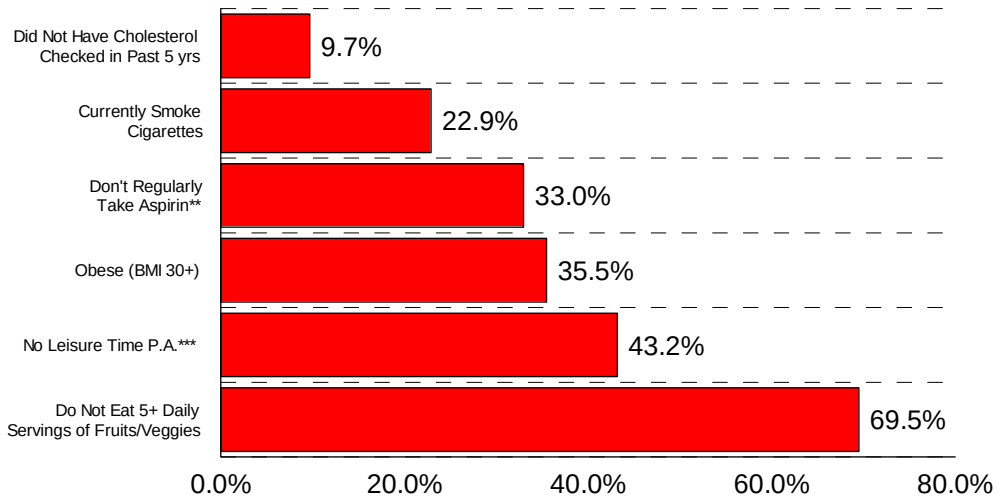
**Non-weighted sample size value

^^Relative Risk represents the percentage ratio for the specific category compared to the reference category within each subpopulation

+,++ Percentage is significantly different than the reference category at the .01 or .001 level respectively

Source: 2001 Nebraska CVD Survey

Figure 2: High Risk Behaviors Among Nebraska Adults with Diagnosed CHD or Stroke*, 2001



*Adults (18+) that have been told by a doctor, nurse, or health professional that they have had a heart attack, myocardial infarction, or stroke or have angina or coronary heart disease
**Among those aged 35 years and older with no aspirin related health problems, the percentage that do not currently take aspirin daily or every other day
***Did not engage in any leisure time physical activity during the 30 days preceding the survey
Source: 2001 Nebraska CVD Survey

Coronary Heart Disease Morbidity

National Overview

According to CDC figures, 13.2 million Americans currently have coronary heart disease (CHD)[1]. CHD includes heart attack, angina pectoris (chest pain), or both, but does not include all diseases of the heart. Thus, the prevalence of all heart disease is higher than that of CHD alone.

U.S. estimates from 2001 indicate that approximately the same number of males and females have CHD, an estimated 6.5 million and 6.7 million respectively[1]. This may be surprising to some women; who feel that heart disease is not a top health concern for them. According to a 1995 Gallup survey, 4 of every 5 U.S. women aged 45-75 did not know that heart disease is the leading cause of death among females nationally[6]. In fact, according to the National Center for Health Statistics, nearly 1 in every 2 U.S. women (46%) perceive breast cancer as their most serious health threat while only 4 percent perceive heart disease as their most serious health threat[7]. According to the American Heart Association, 1 in every 2.4 women dies of CVD (including heart disease and stroke) compared to 1 in every 29 dying of breast cancer[8].

Racial disparities in CHD prevalence are most prominent among females[1]. Among U.S. adults aged 20 and older in 2001, African American females were 32 percent more likely than Mexican American females and 66 percent more likely than White females to have CHD[1].

In addition to CHD prevalence, the incidence of CHD is also alarmingly high. Each year, an estimated 700,000 Americans will have a new coronary attack[9]. In addition, about 500,000 Americans will have a recurrent attack[9]. Among those who had a diagnosed myocardial infarction, 25 percent of men and 38 percent of women are expected to die within 1 year after their event[10].

Coronary heart disease results in serious long-term disabilities among many of its surviving victims. About 2 in every 3 heart attack patients never make a complete recovery[10]. In addition, CHD is the leading cause of premature, permanent disability in the U.S. labor force, accounting for 19 percent of disability allowances by the Social Security Administration[10].

Nebraskans with Diagnosed CHD[5]

Approximately 1 in every 13 Nebraska adults (18 and older) has been diagnosed with CHD (indicating that they have been told by a doctor, nurse, or health professional that they have had a heart attack or myocardial infarction or that they have angina or coronary heart disease). Given the long latency period of CHD, that often provides no recognizable warning to its victim, many additional Nebraska adults are believed to have undiagnosed CHD.

In 2001, 7.9 percent of Nebraska adults reported that they have diagnosed CHD (Table 2). This estimate indicates that between 81,000 and 121,000 Nebraska adults have diagnosed CHD. More specifically, 4.9 percent of Nebraska adults reported having had a diagnosed heart attack (or myocardial infarction), while 6.0 percent of Nebraska adults report having been diagnosed with angina or coronary heart disease.

Male adults in Nebraska are two times more likely than female adults in Nebraska to report diagnosed CHD, 10.6 percent to 5.4 percent respectively. This indicates that an estimated 65,900 male and 35,400 female Nebraska adults have diagnosed CHD. Part of this disparity could be explained by the fact that women who have heart attacks are 1.5 times more likely than men to die from them, and if they survive, are more likely to have a recurrent event[11].

Table 2: Diagnosed Coronary Heart Disease Prevalence* Among Nebraska Adults, 2001

Subpopulation	n**	Weighted Percentage	Estimated number of NE Adults with Diagnosed CHD (margin of error at 95% confidence)
Overall	1,178	7.9%	100,900 (+/- 19,600)
Gender			
Male	397	10.6%	65,900 (+/- 18,800)
Female	781	5.4%	35,400 (+/- 10,400)
Age			
25-44	408	4.6%	22,200 (+/- 9,800)
45-64	354	6.7%	25,600 (+/- 10,000)
65+	293	23.1%	53,700 (+/- 11,200)

*Adults (18+) that have been told by a doctor, nurse, or health professional that they have had a heart attack or myocardial infarction or that they have angina or coronary heart disease

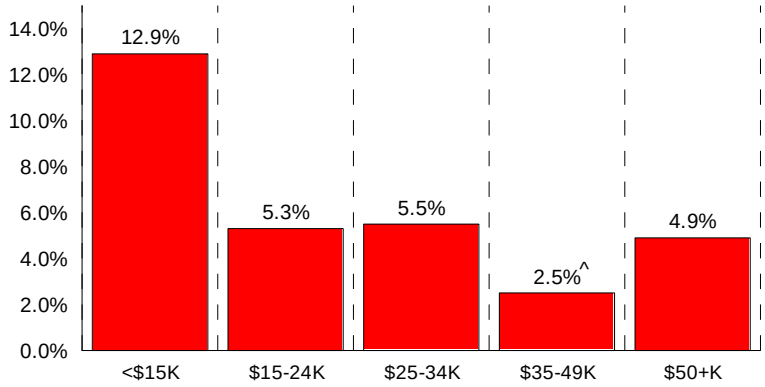
**Non-weighted sample size value

Source: 2001 Nebraska CVD Survey

Age is strongly associated with diagnosed CHD prevalence. In 2001, older Nebraska adults (65 and older) were 3.5 times more likely than middle age adults (45-64 years of age) and 5.0 times more likely than younger adults (25-44) to report having diagnosed CHD.

Among Nebraska adults aged 35-64 years, those with extremely low income appear more likely than adults with higher levels of income to have been diagnosed with CHD (Figure 3). In 2001, the percentage of Nebraska adults with diagnosed CHD, aged 35-64 years, with an annual household income of less than $15,000 is much higher than the percentage in other income categories; however is only significantly different from those earning $35,000 to $49,000 (possibly due to a small sample size per income category). Consequently, these differences warrant further investigation. Among Nebraska adults aged 65 years and older, neither income nor education was associated with diagnosed CHD.

Figure 3: Diagnosed CHD* among Nebraska Adults Aged 35-64 Years by Annual Household Income, 2001



*Adults that have been told by a doctor, nurse, or health professional that they have had a heart attack or myocardial infarction or have angina or coronary heart disease.
^Significantly lower than the <$15K category at the .05 level
n=474 valid cases and 119 missing cases (20.1%)
Source: 2001 Nebraska CVD Survey

Stroke Morbidity

National Overview

According to CDC figures, 4.8 million Americans have had a stroke and are still living[1]. It is estimated that stroke will cost the nation $53.6 billion in 2004 (including both direct and indirect costs)[1].

In 2001, an estimated 2.3 percent of U.S. males (or 2.1 million males) had survived a stroke compared to 1.7 percent of U.S. females (or 2.7 million females)[1]. The fact that a larger number of females than males have survived a stroke may be surprising to some women who tend to not view cardiovascular diseases (including stroke) as particularly threatening. According to the National Center for Health Statistics, nearly 1 in every 2 U.S. females (46%) perceives breast cancer as their most serious health threat[7]. In contrast, the AHA indicates that only 8 percent of American women consider heart disease and stroke to be their greatest health threats[12].

Racial disparities in stroke prevalence are most prominent among females[1]. In 2001, among U.S. adults aged 20 and older, African American females were 2.1 times more likely than White females and 2.5 times more likely than Mexican American females to have survived a stroke[1].

In addition to stroke prevalence, the incidence of stroke is also alarmingly high. National estimates indicate that 700,000 people experience a new or recurrent stroke each year[13]. Of those 700,000 people, 500,000 will experience a new stroke while 200,000 will experience a recurrent stroke[13]. On average, someone within the United States has a stroke every 45 seconds[1]. Each year, about 40,000 more females than males have a stroke (primarily due to a larger older adult female population and higher rates of stroke among older adults)[14].

Stroke is a leading cause of serious, long-term disability in the United States[1]. In 1999, it was estimated that more than 1.1 million American adults had functional limitations, difficulty with activities of daily living, etc. resulting from stroke[15]. In fact, three months after their stroke, 20 percent of stroke survivors still require institutional care[16].

Nebraskans with Diagnosed Stroke[5]

In 2001, approximately 3 percent (2.9%) of Nebraska adults (aged 18 years and older) reported having had a diagnosed stroke (or they were told by a doctor, nurse, or health professional that they had a stroke) (Table 3). This indicates that, in 2001, between 24,800 and 49,300 Nebraska adults had survived a stroke that was diagnosed by a medical professional. Unfortunately a large number of strokes are fatal. Stroke claims the life of approximately 1,100 Nebraska residents each year[17].

The prevalence of stroke may in fact be greater than the 3 percent identified within the 2001 Nebraska CVD survey. Transient ischemic attack (TIA) is a (mini) stroke that often lasts for only minutes with symptoms disappearing within an hour[18]. Victims of TIAs often do not seek medical attention due to the short-lived symptoms; however these individuals are at increased risk for future strokes[18]. Approximately 11 percent of those diagnosed with TIA in the emergency department will have a stroke within 90 days[19].

In 2001, male adults in Nebraska appeared slightly more likely than female adults in Nebraska to have had a diagnosed stroke (3.5% and 2.3% respectively); however this difference is not statistically significant.

Among Nebraska adults, age is strongly associated with self-reported diagnosed stroke. In 2001, Nebraska adults aged 65 years and older were 2.9 times more likely than adults aged 45-64 years and 19.4 times more likely than adults aged 25-44 years to report that they have had a diagnosed stroke.

Table 3: Diagnosed Stroke Prevalence* Among Nebraska Adults, 2001

Subpopulation	n**	Weighted Percentage	Estimated number of NE Adults with Diagnosed CHD (margin of error at 95% confidence)
Overall	1,186	2.9%	37,000 (+/- 12,300)
Gender			
Male	402	3.5%	21,800 (+/- 11,200)
Female	784	2.3%	15,100 (+/- 6,900)
Age			
25-44	410	0.5%	2,400 (+/- 3,300)
45-64	355	3.3%	12,600 (+/- 7,100)
65+	298	9.7%	22,500 (+/- 7,800)

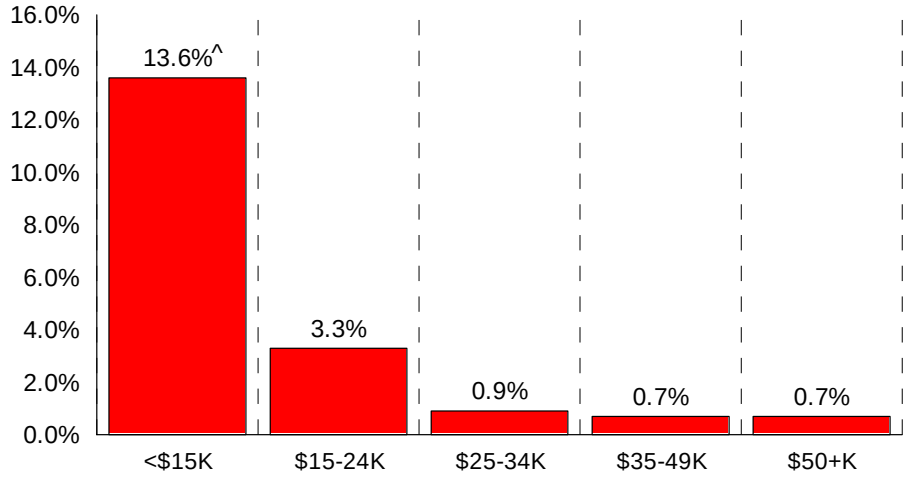
*Adults (18+) that have been told by a doctor, nurse, or health professional that they have had a stroke

**Non-weighted sample size value

Source: 2001 Nebraska CVD Survey

Among Nebraska adults aged 35-64 years, those with extremely low income are more likely to report having had a diagnosed stroke (Figure 4). In 2001, 13.6 percent of Nebraska adults aged 35-64 years (or about 1 in every 8) with an annual household income of less than $15,000 per year reported having had a diagnosed stroke. This percentage is significantly higher than all other income categories. Among Nebraska adults aged 65 years and older, neither income nor education was associated with diagnosed stroke.

Figure 4: Diagnosed Stroke* among Nebraska Adults Aged 35-64 Years by Annual Household Income, 2001



*Adults that have been told by a doctor, nurse, or health professional that they have had a stroke
^Significantly higher than all other age categories at the .05 level
n=476 valid cases and 117 missing cases (19.7%)
Source: 2001 Nebraska CVD Survey